Key Terms

algorithm problem-solving strategy characterized by a specific set of instructions

analytical intelligence aligned with academic problem solving and computations

anchoring bias faulty heuristic in which you fixate on a single aspect of a problem to find a solution

artificial concept concept that is defined by a very specific set of characteristics

availability heuristic faulty heuristic in which you make a decision based on information readily available to you

cognition thinking, including perception, learning, problem solving, judgment, and memory

cognitive psychology field of psychology dedicated to studying every aspect of how people think

cognitive script set of behaviors that are performed the same way each time; also referred to as an event schema

concept category or grouping of linguistic information, objects, ideas, or life experiences

confirmation bias faulty heuristic in which you focus on information that confirms your beliefs

convergent thinking providing correct or established answers to problems

creative intelligence ability to produce new products, ideas, or inventing a new, novel solution to a problem

creativity ability to generate, create, or discover new ideas, solutions, and possibilities

crystallized intelligence characterized by acquired knowledge and the ability to retrieve it

cultural intelligence ability with which people can understand and relate to those in another culture

divergent thinking ability to think "outside the box" to arrive at novel solutions to a problem

dysgraphia learning disability that causes extreme difficulty in writing legibly

dyslexia common learning disability in which letters are not processed properly by the brain

emotional intelligence ability to understand emotions and motivations in yourself and others

event schema set of behaviors that are performed the same way each time; also referred to as a cognitive script

Flynn effect observation that each generation has a significantly higher IQ than the previous generation

fluid intelligence ability to see complex relationships and solve problems

functional fixedness inability to see an object as useful for any other use other than the one for which it was intended

grammar set of rules that are used to convey meaning through the use of a lexicon

heuristic mental shortcut that saves time when solving a problem

hindsight bias belief that the event just experienced was predictable, even though it really wasn't

intelligence quotient (also, IQ) score on a test designed to measure intelligence

language communication system that involves using words to transmit information from one individual to another

lexicon the words of a given language

Multiple Intelligences Theory Gardner's theory that each person possesses at least eight types of intelligence

mental set continually using an old solution to a problem without results

morpheme smallest unit of language that conveys some type of meaning

natural concept mental groupings that are created "naturally" through your experiences

norming administering a test to a large population so data can be collected to reference the normal scores for a population and its groups

overgeneralization extension of a rule that exists in a given language to an exception to the rule

phoneme basic sound unit of a given language

practical intelligence aka "street smarts"

problem-solving strategy method for solving problems

prototype best representation of a concept

range of reaction each person's response to the environment is unique based on his or her genetic make-up

representative bias faulty heuristic in which you stereotype someone or something without a valid basis for your judgment

representative sample subset of the population that accurately represents the general population

role schema set of expectations that define the behaviors of a person occupying a particular role

schema (plural = schemata) mental construct consisting of a cluster or collection of related concepts

semantics process by which we derive meaning from morphemes and words

standard deviation measure of variability that describes the difference between a set of scores and their mean

standardization method of testing in which administration, scoring, and interpretation of results are consistent

syntax manner by which words are organized into sentences

trial and error problem-solving strategy in which multiple solutions are attempted until the correct one is found

triarchic theory of intelligence Sternberg's theory of intelligence; three facets of intelligence: practical, creative, and analytical

working backwards heuristic in which you begin to solve a problem by focusing on the end result

This content is available for free at http://legacy.cnx.org/content/col11629/1.4

Summary

7.1 What Is Cognition?
In this section, you were introduced to cognitive psychology, which is the study of cognition, or the brain's ability to think, perceive, plan, analyze, and remember. Concepts and their corresponding prototypes help us quickly organize our thinking by creating categories into which we can sort new information. We also develop schemata, which are clusters of related concepts. Some schemata involve routines of thought and behavior, and these help us function properly in various situations without having to "think twice" about them. Schemata show up in social situations and routines of daily behavior.

7.2 Language
Language is a communication system that has both a lexicon and a system of grammar. Language acquisition occurs naturally and effortlessly during the early stages of life, and this acquisition occurs in a predictable sequence for individuals around the world. Language has a strong influence on thought, and the concept of how language may influence cognition remains an area of study and debate in psychology.

7.3 Problem Solving
Many different strategies exist for solving problems. Typical strategies include trial and error, applying algorithms, and using heuristics. To solve a large, complicated problem, it often helps to break the problem into smaller steps that can be accomplished individually, leading to an overall solution. Roadblocks to problem solving include a mental set, functional fixedness, and various biases that can cloud decision making skills.

7.4 What Are Intelligence and Creativity?
Intelligence is a complex characteristic of cognition. Many theories have been developed to explain what intelligence is and how it works. Sternberg generated his triarchic theory of intelligence, whereas Gardner posits that intelligence is comprised of many factors. Still others focus on the importance of emotional intelligence. Finally, creativity seems to be a facet of intelligence, but it is extremely difficult to measure objectively.

7.5 Measures of Intelligence
In this section, we learned about the history of intelligence testing and some of the challenges regarding intelligence testing. Intelligence tests began in earnest with Binet; Wechsler later developed intelligence tests that are still in use today: the WAIS-IV and WISC-V. The Bell curve shows the range of scores that encompass average intelligence as well as standard deviations.

7.6 The Source of Intelligence
Genetics and environment affect intelligence and the challenges of certain learning disabilities. The intelligence levels of all individuals seem to benefit from rich stimulation in their early environments. Highly intelligent individuals, however, may have a built-in resiliency that allows them to overcome difficult obstacles in their upbringing. Learning disabilities can cause major challenges for children who are learning to read and write. Unlike developmental disabilities, learning disabilities are strictly neurological in nature and are not related to intelligence levels. Students with dyslexia, for example, may have extreme difficulty learning to read, but their intelligence levels are typically average or above average.

Review Questions

1. Cognitive psychology is the branch of psychology that focuses on the study of _____.

a. human development
b. human thinking
c. human behavior
d. human society

2. Which of the following is an example of a prototype for the concept of leadership on an athletic team?

a. the equipment manager
b. the star player
c. the head coach
d. the scorekeeper

3. Which of the following is an example of an artificial concept?
a. mammals
b. a triangle's area
c. gemstones
d. teachers

4. An event schema is also known as a cognitive _____.
a. stereotype
b. concept
c. script
d. prototype

5. _____ provides general principles for organizing words into meaningful sentences.
a. Linguistic determinism
b. Lexicon
c. Semantics
d. Syntax

6. _____ are the smallest unit of language that carry meaning.
a. Lexicon
b. Phonemes
c. Morphemes
d. Syntax

7. The meaning of words and phrases is determined by applying the rules of _____.
a. lexicon
b. phonemes
c. overgeneralization
d. semantics

8. _____ is (are) the basic sound units of a spoken language.
a. Syntax
b. Phonemes
c. Morphemes
d. Grammar

9. A specific formula for solving a problem is called _____.
a. an algorithm
b. a heuristic
c. a mental set
d. trial and error

10. A mental shortcut in the form of a general problem-solving framework is called _____.
a. an algorithm
b. a heuristic
c. a mental set
d. trial and error

11. Which type of bias involves becoming fixated on a single trait of a problem?
a. anchoring bias
b. confirmation bias
c. representative bias
d. availability bias

12. Which type of bias involves relying on a false stereotype to make a decision?
a. anchoring bias
b. confirmation bias
c. representative bias
d. availability bias

13. Fluid intelligence is characterized by _____.

a. being able to recall information
b. being able to create new products
c. being able to understand and communicate with different cultures
d. being able to see complex relationships and solve problems

14. Which of the following is not one of Gardner's Multiple Intelligences?
a. creative
b. spatial
c. linguistic
d. musical

15. Which theorist put forth the triarchic theory of intelligence?
a. Goleman
b. Gardner
c. Sternberg
d. Steitz

This content is available for free at http://legacy.cnx.org/content/col11629/1.4

16. When you are examining data to look for trends, which type of intelligence are you using most?
a. practical
b. analytical
c. emotional
d. creative

17. In order for a test to be normed and standardized it must be tested on _____.
a. a group of same-age peers
b. a representative sample
c. children with mental disabilities
d. children of average intelligence

18. The mean score for a person with an average IQ is _____.
a. 70
b. 130
c. 85
d. 100

19. Who developed the IQ test most widely used today?
a. Sir Francis Galton
b. Alfred Binet
c. Louis Terman
d. David Wechsler

20. The DSM-5 now uses _____ as a diagnostic label for what was once referred to as mental retardation.
a. autism and developmental disabilities
b. lowered intelligence
c. intellectual disability
d. cognitive disruption

21. Where does high intelligence come from?
a. genetics
b. environment
c. both A and B
d. neither A nor B

22. Arthur Jensen believed that _____.
a. genetics was solely responsible for intelligence
b. environment was solely responsible for intelligence
c. intelligence level was determined by race
d. IQ tests do not take socioeconomic status into account

23. What is a learning disability?
a. a developmental disorder
b. a neurological disorder
c. an emotional disorder
d. an intellectual disorder

24. Which of the following statements is true?
a. Poverty always affects whether individuals are able to reach their full intellectual potential.
b. An individual's intelligence is determined solely by the intelligence levels of his siblings.
c. The environment in which an individual is raised is the strongest predictor of her future intelligence
d. There are many factors working together to influence an individual's intelligence level.

Critical Thinking Questions

25. Describe a social schema that you would notice at a sporting event.

26. Explain why event schemata have so much power over human behavior.

27. How do words not only represent our thoughts but also represent our values?

28. How could grammatical errors actually be indicative of language acquisition in children?

29. How do words not only represent our thoughts but also represent our values?

30. What is functional fixedness and how can overcoming it help you solve problems?

31. How does an algorithm save you time and energy when solving a problem?

32. Describe a situation in which you would need to use practical intelligence.

33. Describe a situation in which cultural intelligence would help you communicate better.

34. Why do you think different theorists have defined intelligence in different ways?

35. Compare and contrast the benefits of the Stanford-Binet IQ test and Wechsler's IQ tests.

36. What evidence exists for a genetic component to an individual's IQ?

37. Describe the relationship between learning disabilities and intellectual disabilities to intelligence.

Personal Application Questions

38. Describe a natural concept that you know fully but that would be difficult for someone else to understand and explain why it would be difficult.

39. Can you think of examples of how language affects cognition?

40. Which type of bias do you recognize in your own decision making processes? How has this bias affected how you've made decisions in the past and how can you use your awareness of it to improve your decisions making skills in the future?

41. What influence do you think emotional intelligence plays in your personal life?

42. In thinking about the case of Candace described earlier, do you think that Candace benefitted or suffered as a result of consistently being passed on to the next grade?

43. Do you believe your level of intelligence was improved because of the stimuli in your childhood environment? Why or why not?

This content is available for free at http://legacy.cnx.org/content/col11629/1.4